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Editorial: Trust management for multimedia big data

Zheng YAN

Jun LIU

DENG, Robert H.
Singapore Management University, robertdeng@smu.edu.sg

Francisco HERRERA

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ZHENG YAN, Xidian University, Aalto University
JUN LIU, Xi'an Jiaotong University
ROBERT H. DENG, Singapore Management University
FRANCISCO HERRERA, University of Granada

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With the rapid growth of Cyber Physical and Social Computing (CPSC) and cloud computing, huge volumes of multimedia data collected by various devices through different communication channels are being processed, analyzed, and mined in order to support many promising services. However, analysis and mining of multimedia data introduce a number of issues related to its trust management, especially for multimedia big data. On the one hand, multimedia data mining could disclose privacy of data owners or related entities to unauthorized parties, which greatly impedes wide user adoption of multimedia applications. On the other hand, trust in multimedia data perception, transmission, communications, fusion, mining, storage, and usage impacts the quality of multimedia services. In this context, multimedia data trust starts to attract special attention in order to achieve security, privacy, and quality in every step of multimedia data transmission and processing. In particular, big volumes of multimedia data introduce special requirements for efficiency, availability, and dependability of its

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Authors' addresses: Z. Yan (corresponding author), State Key Laboratory of Integrated Services Networks, School of Cyber Engineering, Xidian University, PO Box 91, Xi'an, 710071 China; email: zyan@xidian.edu.cn; Dept. of Communications and Networking, Aalto University, Espoo, Finland, 02150; email: zheng.yan@aalto.fi; J. Liu, Xi'an Jiaotong University, Xi'an, 710049 China; email: liukeen@mail.xjtu.edu.cn; R. H. Deng, School of Information Systems, Singapore Management University, 80 Stamford Road, 178902 Singapore; email: robertdeng@smu.edu.sg; F. Herrera, Dept. of Computer Science and Artificial Intelligence, University of Granada, Spain; email: herrera@decsai.ugr.es.

trust management. Trust management for multimedia big data becomes a key issue that impacts the success of multimedia computing, communications, and applications.

Existing solutions for trust management for multimedia big data are imperfect or not comprehensive. Multimedia big data brings additional challenges to trust management research with regard to the security and privacy of multimedia, the efficiency and accuracy of multimedia process and the dependability and quality of processing results. This special issue aims to start a forum to report recent advances in this research field. We accepted ten articles after rigorous peer review, which are briefly introduced here.

In the article "Evaluating the Privacy Risk of User-Shared Images," Cheung and She concluded that using social graphs is 2 and 2.5 times more effective in deanonymization than using origins or genders and that employing user-shared images is effective in online friendship recommendation, gender identification, and origin inference. The article "Enhanced User Context-Aware Reputation Measurement of Multimedia Service" proposes an enhanced user context-aware reputation measurement approach for multimedia services. The article "Privacy-Preserving Multimedia Big Data Aggregation in Large-Scale Wireless Sensor Networks" presents a five-step solution to achieve multimedia big data aggregation and provide reliable privacy preservation in wireless sensor networks. In "Secure Social Multimedia Big Data Sharing Using Scalable JFE in the TSHWT Domain," Ye et al. propose a Joint Fingerprinting and Encryption (JFE) scheme based on Tree-Structured Haar Wavelet Transform (TSHWT) with the purpose of protecting media distribution in the social network environment. In the article "Image Encryption Based on Compressive Sensing and Scrambled Index for Secure Multimedia Transmission," Li et al. present a Compressive Sensing-based encryption method for ensuring the security of multimedia transmission and enhancing the quality of decrypted images. A novel robust image hashing method based on quaternion Zernike moments (QZMs) with a short length is proposed for multimedia authentication and forensic in the article "Robust Hashing Based on Quaternion Zernike Moments for Image authentication." In the article "Trustworthy Authentication on Scalable Surveillance Video with Background Model Support," Wei et al. propose a highly efficient and robust authentication scheme, TrustSSV, based on quality/spatial scalable characteristics of Scalable Video Coding (SVC) codestreams. In "SecSIFT: Secure Image SIFT Feature Extraction in Cloud Computing," Qin et al. have developed a privacy-preserving Scalar Invariant Feature Transform (SIFT) system over encrypted image data with high efficiency by applying a set of independent and cooperative cloud servers to avoid utilizing homomorphic encryption. In the article "PPHOCFS: Privacy Preserving High-Order CFS Algorithm on Cloud for Clustering Multimedia Data," the authors study an approach for multimedia data clustering with privacy preservation in a tensor space based on cloud computing. Li et al. propose a novel approach using the Semantic-Based Access Control (SBAC) techniques for acquiring secure financial services on multimedia big data in cloud computing in the article "Intercrossed Access Controls for Secure Financial Services on Multimedia Big Data in Cloud Systems."

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